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The Role of Pubertal Timing and Heterosocial Involvement in Early Adolescents' Media Internalization

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Abstract

Sexualizing media promote narrowly defined beauty standards and stress the importance of attractiveness in society. Media effects research on early adolescents has confirmed the link between the internalization of media appearance ideals and negative body image outcomes. The present three-wave panel study ($N = 968$, $\bar{X}_{\text{age}} = 11.02$, $SD = 1.03$) sought to contribute to the current literature by examining how appearance-related developmental factors may influence early adolescents' level of media internalization. We focused on two potential triggers of media internalization: pubertal timing and heterosocial involvement (i.e., one's involvement in cross-sex activities). Results indicated that pubertal timing positively moderates the influence of sexualizing magazine consumption on media internalization. For early adolescents who mature earlier than peers of the same age, reading sexualizing magazines resulted in more media internalization. Notably, the moderating influence of pubertal timing was buffered among early adolescents with moderate to high levels of heterosocial involvement. Taken together, the results highlight the role of developmental factors in the relationship between early adolescents' sexualizing magazine exposure and media internalization and point to the potential protective role of cross-sex peer interactions in media internalization.

Keywords: Sexualizing magazines, media internalization, media appearance ideals, heterosocial involvement, pubertal timing

The Role of Pubertal Timing and Heterosocial Involvement in Early Adolescents' Media Internalization: A Moderated Moderation Analysis

In Western society, the prevalence of body dissatisfaction is reaching concerning levels already by pre- and early adolescence (e.g., Clark & Tiggemann, 2007; Dion et al., 2016; Tremblay & Lariviere, 2009). Approximately one in two early adolescents (ages 9-14) feels dissatisfied with their body and desires a thinner or more muscular body shape (Jongenelis, Byrne, & Pettigrew, 2014). These prevalence rates are worrisome, as body dissatisfaction has been linked to various negative outcomes (e.g., binge eating, Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006; social appearance anxiety, Dunn, Lewis, & Patrick, 2010), both in adolescence and in later life. Scholars interested in the study of media and body image have emphasized the central role of sexualizing media in early adolescents' body image concerns (Levine & Murnen, 2009; see Ward, 2016, for a review). Sexualizing media promote narrowly defined beauty standards and stress the importance of attractiveness in society (e.g., Simpson, Kwitowski, Boutte, Gow, & Mazzeo, 2016; see, Vandenberg, 2017, for a review). Repeated exposure to idealized appearance norms may prompt individuals to internalize these norms and use them as a comparison standard (Dakanalis et al., 2012; Fredrickson & Roberts, 1997; Vandenberg & Eggermont, 2012). Media internalization pertains to the adoption of media-defined appearance ideals as a personal standard of attractiveness (Thompson & Stice, 2001) and is reflected by individuals' tendency toward actual-ideal body image comparisons. Given that media appearance ideals are inherently unrealistic (e.g., Greenberg, Eastin, Hofschire, Lachlan, & Brownell, 2003), such comparisons highlight the discrepancy between the internalized ideal and one's actual appearance resulting in body dissatisfaction (e.g., Rousseau, Eggermont, & Frison, 2017). In support of this, prior studies have identified media internalization as a mechanism underlying the relationship between sexualizing media exposure and body dissatisfaction (e.g., Anschutz, Spruijt-Metz, Van Strien, & Engels, 2011;

Rousseau, Rodgers, & Eggermont, 2017; Rousseau & Eggermont, 2018; see Grabe, Ward, & Hyde, 2008, for a review).

Given the central role of media internalization in early adolescents' negative body image, it is important to investigate the conditions under which sexualizing media exposure leads to more or less media internalization. In this context, research has shown that associations between media exposure and media internalization vary across early adolescents (Grabe et al., 2008) and that these individual differences may be explained by appearance-related dispositions (e.g., appearance schematicity; Rousseau, Gamble, & Eggermont, 2017). The current study contributes to the existing literature by considering appearance-related developmental factors that can reinforce or mitigate the relationship between sexualizing media exposure and media internalization. Drawing on the idea that motivationally relevant information is more deeply processed (LC4MP; Lang, 2000, 2006), we hypothesize that early developing adolescents are more likely to pay attention to and store appearance related media content, resulting in greater media internalization. Additionally, expanding on Katz and Lazarsfeld's (1955) filter hypothesis (i.e., personal communication mediates the impact of mass communication), we hypothesize that cross-sex interactions may buffer the adverse impact of early pubertal timing on media internalization.

Using a three-wave longitudinal survey design of 968 early adolescent boys and girls (age range 9-13), the purpose of the present study was therefore to (a) examine the moderating influence of pubertal timing on the relationship between sexualizing magazine consumption and media internalization, and (b) test the buffering role of heterosocial involvement in this relationship (see Figure 1).

Sexualizing Media and Early Adolescents' Media Internalization

Mass media, including primetime television shows, magazines, and music videos, are replete with messages about how men and women should ideally look like (see Vandenberg,

2017, for a review). Generally, sexualizing media promote a muscular and mesomorphic ideal for men and a curvaceously yet athletic-thin body for women (Dallesasse & Kluck, 2013; Flynn Park, Morin, & Stana, 2015; see Vandebosch, 2017, for a review). Moreover, sexualizing media portray these appearance ideals as providing an important advantage for attracting the opposite sex, emphasizing the importance of attractiveness in socio-romantic interactions (e.g. Simpson et al., 2016; see Vandebosch, 2017, for a review). For instance, in their content analysis of popular prime-time shows, Greenberg and colleagues (2003) demonstrated that overweight characters are less likely to be covered in affection-focused behavior: they have fewer interactions with romantic partners and are involved in fewer sexual behavior. Likewise, in music entertainment television sexual attraction is often emphasized in combination with appearance ideals (Vandebosch, Vervloessem, & Eggermont, 2013). Print media have also been criticized for their sexualizing content. Especially, fashion and youth magazines appear to prioritize appearance over personality and consider bodily attractiveness as an important advantage in successful dating and social life (Hobza, Walker, Yakushko, & Peugh, 2007; Ricciardelli, Clow, & White, 2010).

Researchers testing principles of sociocultural theory have pointed to media internalization (e.g., Anschutz, Engels, Van Leeuwe, & van Strien, 2009; Rousseau, Aubrey, & Eggermont, 2018a) as the mediating link between sexualizing media exposure and body image disturbance. Additionally, research has demonstrated that the processes through which sexualizing media contribute to body dissatisfaction differ across different media. For instance, Tiggemann (2003) demonstrated that while media internalization mediated the link between sexualizing magazine consumption and body dissatisfaction, it did not link sexualizing television exposure to higher levels of media internalization. Building on this finding, the present study focuses on the link between sexualizing magazines consumption and media

internalization and aims to identify developmental factors that mitigate/reinforce this association.

As explained in the introduction, media internalization entails the adoption of media appearance ideals as a personal norm and is reflected by individuals' tendency toward actual-ideal appearance comparisons (Thompson & Stice, 2001). Drawing on this definition, it is important to consider developmental factors that encourage early adolescents to attend to appearance-related cues in magazines and engage in comparison with idealized media models. Developmental changes associated with early adolescence create individual differences between early adolescents on biological and social level, which might influence the way magazine content is used and processed. During early adolescence, two developmental triggers may be especially related to media internalization: The adolescent's level of puberty in relation to his/her peers (i.e., pubertal timing) and the adolescent's gradual increase in cross-sex interactions (i.e., heterosocial involvement).

The Moderating Influence of Pubertal Timing

According to the Limited Capacity Model of Motivated Mediated Message Processing (LC4MP; Lang, 2000, 2006), individuals are more likely to attend to, encode, and store media messages if these messages contain information that is motivationally relevant to them. For example, if information is instrumental in achieving a personal goal, individuals allocate more cognitive resources to encode, store, and retrieve the observed information. Deeply processed information, in turn, leads to better memory performance as this information is more strongly connected to existing knowledge structures in long-term memory (cf., depth of processing theory; Craik & Lockhart, 1972). Hence, motivationally relevant media information is more likely to be internalized and used to inform goal-directed actions. Based on these premises, it is important to gain insight into the conditions under which sexualized

media ideals become more relevant for early adolescents. Early pubertal timing might be one factor that increases the perceived personal relevance of idealized media messages.

During early adolescence, the first visible signs of puberty appear including acne, an increase in body fat for girls, and increased muscle mass and height for boys. As a consequence, the early adolescent phase is characterized by great variation in pubertal timing, or the level at which one physically matures relative to same-sex same-aged peers (Cumming et al., 2011). Impending or current pubertal changes make issues of body enhancement quite salient to early maturing adolescents, causing feelings of body image insecurity and anxiety among this group (Laursen & Hartl, 2013). Moreover, early maturation also fosters alienation from the peer group (as early developers feel different from and more mature than *on-time* peers) which causes early developing adolescents to seek out and socialize with older peers who resemble them physically (Laursen & Hartl, 2013; Skoog & Stattin, 2014).

Experiencing all these feelings of discomfort concerning their outward appearance, early developers may be especially motivated to look for ways to improve their physical appearance (Cash, Santos, & Williams, 2005; Choma, Shove, Busseri, Sadava, & Hosker, 2009). In order to improve aspects of their body that they evaluate as deviating from ‘the norm’, they may engage in upward comparisons with idealized others (e.g., idealized media models) (Choma et al., 2009; Festinger, 1954; Skoog & Stattin, 2014; Stattin & Magnusson, 1990). Early developers also report more negative appearance pressure from peers (e.g., peer rejection and peer teasing) compared to *on-time* and *late* maturers (Lawler & Nixon, 2011; Lindberg, Grabe, & Hyde, 2007). This appearance-related criticism from peers may discourage early developing adolescents from consulting their peers and instead encourage them to turn to media for appearance-related information. Therefore, we suggest that early maturing boys and girls may use idealized media models, rather than *on-time* peers, to compare with and aspire to (see Myers & Crowther, 2009, for a review). We hypothesize that, compared to *late* and *on-time*

maturers, early maturing boys and girls are more likely to make upward comparisons with idealized media models and internalize media ideals as a personal norm and standard (Festinger, 1954; Choma et al, 2009).

Taken together, early adolescents who reach puberty before their peers may actively seek out media for relevant appearance-related information and designate more resources than their peers to the processing of this information. In turn, expanding on the LC4MP framework (Lang, 2000, 2006) higher levels of attention and encoding increase the chance that a long-term mental representation of the media information is created, and that this stored information is transformed into personal norms that guide behavior (i.e., media message internalization). Drawing on this reasoning, we expect a stronger relationship between sexualizing magazine exposure and media internalization among early maturers compared with *on-time* and *late* maturing adolescents.

Hypothesis 1 (H1): Early pubertal timing positively moderates the relationship between sexualizing magazine consumption and media internalization.

The Protective Role of Heterosocial Involvement in Media internalization

A second factor that may be associated with media internalization is heterosocial involvement, which refers to early adolescents' engagement in cross-sex peer interactions. Entering early adolescence, children form new social relationships and gradually shift from same-sex peer groups to mixed-sex peer groups (Arndorfer & Stormshak, 2008).

Expanding on the filter-hypothesis (Katz & Lazarsfeld, 1955), which states that individuals interpersonally discuss media content to negotiate its validity and relevance (Metzger, & Flanagin, & Medders, 2010; Schmitt-Beck, 2003), we suggest that cross-sex peer interactions may influence the way media appearance ideals are processed and adopted as a personal goal and standard. In particular, we suggest that cross-sex peers can communicate body acceptance and criticize idealized media norms and, in doing so, reduce early adolescents'

tendency toward media internalization. The potential protective role of cross-sex peer interaction in early developing adolescents' media internalization can be explained in two ways.

First, cross-sex interactions go hand in hand with an increased interest in dating and romantic relationships, encouraging early adolescents to enhance their physical attractiveness and, in doing so, their dating potential (Arndorfer & Stormshak, 2008). Most early adolescents, however, have little to no experience with dating and romantic relationships and thus lack knowledge of what is perceived as attractive by their cross-sex peers. Since media show abundant examples of successful dating and link sexual attraction with gender-specific appearance ideals (Gondoli, Corning, Salafia, Bucchianeri, & Fitzsimmons, 2011), early adolescents may turn to media as a source of information. This media content generally produces gender codes in which appearance norms for men and women are embedded (Bordo, 2003; Pope, Phillips, & Olivardia, 2000). The underlying message is that approximating appearance standards as embodied by media models results in positive outcomes, such as romantic attention (Graves & Kwan, 2012). Nevertheless, despite the informational value of media, appearance-related information provided by cross-sex peers may be motivationally relevant as well. Interesting in this context is the suggestion that cross-sex peers may challenge the media's message that romantic desirability is contingent on one's conformity to sexualized appearance ideals (e.g., Rousseau & Eggermont, 2017). For example, cross-sex peers may emphasize that humor or other non-appearance-related characteristics render a person romantically desirable as well. This 'media-peer-discordance' may decrease early adolescents' willingness to comply with media-promoted standards of attractiveness. Put differently, if media and peer messages are discordant, early adolescents' may be discouraged from accepting the sexualizing media message and, in turn, may not use this media information to guide self-perceptions (thus inhibiting the internalization of media ideals).

Second, although heterosocial involvement is usually linked to romantic experiences (e.g., Arndorfer & Stormshak, 2008), research has shown that early adolescents engage predominantly in platonic kinds of activities with cross-sex peers (e.g., Compian, Gowen, & Hayward, 2004). In their study, Compian and colleagues found that most (43%) early adolescent girls have platonic relationships with boys without any romantic considerations, with only a small minority (3%) of girls being romantically involved with boys. This platonic opposite-sex involvement can sometimes serve as a protective force against negative emotional outcomes. For instance, compared to romantic cross-sex experiences, a platonic relationship between peers of the opposite sex is not related to body dissatisfaction and depressive symptoms (Compian et al., 2004). Moreover, it has been suggested that platonic cross-sex involvement may foster positive adjustment, as it can elicit perceptions of being accepted by and integrated within the peer group (Compian et al., 2004; McDougall et al., 2000). In the context of positive body image, Compian et al. (2004, p. 1) found a significant interaction between platonic involvement and pubertal status: Girls who were less sexually mature but who also reported more platonic involvement with boys reported greater body image satisfaction. The protective role of platonic cross-sex interactions in body image outcomes might stem from the fact that platonic relationships reduce the perceived pressure to conform to specific sexualized heterosexual scripts (Larson, Clore, & Wood, 1999).

In conclusion, expanding on the filter hypothesis, we hypothesize that cross-sex peer interactions may stimulate the belief that one does not need to strive for a media-promoted ideal appearance in order to be (romantically) liked or accepted by the opposite sex. Based on the assumption that perceived incongruence between media content and peer norms encourages individuals to discount the messages in the media, we hypothesize that:

Hypothesis 2: Increased heterosocial involvement will weaken the amplifying influence of early pubertal timing on the relationship between sexualized magazine exposure and media internalization.

Method

Sample and Procedure

The present study draws on a three-wave panel survey with an interval of six months that was conducted among early adolescents between October 2014 and October 2015. Approval for the survey was granted by the Institutional Review Board of the host university. Participants were selected by a two-step sampling method. In the first step, drawing on a list of the [country deleted] Department of Education, elementary and secondary schools from different educational and geographical backgrounds were randomly selected and requested to participate in the study. By the end of this stage, 24 elementary schools and 13 secondary schools agreed to participate. Next, principals, teachers, parents, and pupils were informed about the study and active informed consent was obtained from the legal guardians of all enrolled pupils. During the second stage, research assistants visited the selected schools and administered the survey by asking all enrolled students to complete a self-administered paper-and-pencil questionnaire. All students completed the survey at school during school hours, in a data collection room that provided individual desk carrels with dividers between them to ensure confidentiality. In order to reduce social desirability, participants were informed that all answers would be treated confidentially. To further emphasize confidentiality, each student was given an envelope to put the questionnaire in after completion.

In all, 1,971 early adolescents completed the survey at baseline (52.6% boys). The mean age of this sample was 11.30 years ($SD = 1.06$), 31.6% were fifth-graders, 35.5% sixth-graders, and 33% seventh-graders. A majority of the sample was born in [country deleted] (93%). In the second wave, 1,602 pupils of those who had participated in the first wave participated again

(response rate of 81%), 968 respondents were tracked over three waves (49% of total). A MANCOVA (controlling for age, body mass index (BMI), and gender) using Pillai's Trace, $V = .03$, $F(6, 591) = 2.44$, $p = .018$, $\eta p^2 = .03$ showed significant differences between those who participated in one or two waves and those who participated in all waves. Separate univariate ANOVAs showed that those who completed all three waves viewed significantly more primetime television than those who completed only one or two waves, $F(1, 602) = 3.86$, $p = .05$, $\eta p^2 = .01$. There were no significant differences between completers and non-completers on the other key variables (i.e., pubertal development, heterosocial involvement, media internalization, magazine reading, and music television exposure).

Measures

Media variables. The MTV music television channel was selected to measure *sexualizing music television exposure*, as this channel not only shows sexually objectifying music videos (Aubrey & Frisby, 2011) but also broadcasts reality dating TV-shows (e.g., *Geordie Shore*, *Ex on the Beach*) that contain sexualized and narrowly defined gender portrayals (e.g., Bond & Drogos, 2014; Vandenberg et al., 2013). Using a 7-point scale ranging from 1 (*never*) to 7 (*almost every day*), participants indicated how often they watched the MTV music television channel. *Primetime television viewing time* was measured using timelines, a procedure that has been used successfully in prior research (e.g., Eggermont, 2006). Six timelines ranging from 7 a.m. until 2 a.m. the next day were presented. Each hour was divided into two checkboxes, each representing 30 minutes. Respondents indicated when they watch television on a typical weekday and a typical Saturday or Sunday by marking all corresponding checkboxes. Next, we added up all the marked checkboxes between 8 and 11 p.m. and divided the total score by two to convert the estimates into hours. To calculate the respondent's mean weekly primetime television viewing, we multiplied the weekend day viewing hours by two and added the result to the number of hours reported for the five

weekdays. For our measure of *sexualizing magazine consumption* we selected magazine genres that are known for their focus on appearance (e.g., Trekels & Eggermont, 2017). Using a 5-point scale ranging from 1 (*never*) to 5 (*almost every day*), respondents indicated how often they read four different types of magazines (i.e., magazines for women, magazines for youth, sports magazines, and celebrity magazines). Item scores were averaged to create an estimate of participants' level of magazine reading.

Pubertal timing. Pubertal timing was measured by an adapted version of the Pubertal Development Scale ([PDS], Petersen, Crockett, Richards, & Boxer, 1988). Boys and girls were asked to report their perceived development on four indices of pubertal growth: growth spurt, body hair, skin changes (pimples), voice-related changes (boys only) and breast development (girls only). Answers were scored on a four-point Likert-type scale ranging from 1 (*not yet started*) to 4 (*seems complete*), except for the item assessing skin changes, which was dichotomized into no skin changes, coded 1, versus skin changes, coded 4. Within each age cohort, mean scores were then computed for boys and girls separately, resulting in a scale with an acceptable internal consistency (Cronbach's alpha ranging from .69 to .79). Next, the total PDS scores were standardized within each age and gender cohort to create a measure of pubertal timing (e.g., Skoog, Sorbring, & Bohlin, 2015), with higher scores indicating earlier maturation relative to age-mates of the same gender.

Media internalization. To measure respondents' appearance-related comparison with media models and endorsement of media-promoted appearance ideals as a personal goal and standard, we used the Internalization-General subscale of the Sociocultural Attitudes Toward Appearance Scale-3 (Thompson, Van Den Berg, Roehrig, Guarda, & Heinberg, 2004). To avoid response fatigue, we shortened the original nine-item scale to five items, and selected only positively-worded items with a factor loading greater than $|.40|$. In doing so, we followed Sánchez-Carracedo et al.'s (2012) recommendation of not including reverse-coded items, as

the use of scales with a mixed format adversely affects early adolescents' responses to negatively worded items (Marsh, 1986). The remaining five items were scored on a five-point Likert-type scale ranging from 1 (*I totally disagree*) to 5 (*I totally agree*). A sample item reads: "I compare my body to the bodies of TV and movie stars." An EFA using direct oblimin extracted one factor with an eigenvalue of 3.45 and explained 69.04 % of the variance. By averaging the item scores, an estimate of early adolescents' media internalization was created, with higher scores indicating greater media internalization. Internal consistency was acceptable in each wave ($\alpha_{w1} = .89$; $\alpha_{w2} = .90$; $\alpha_{w3} = .92$).

Heterosocial involvement. To measure respondents' involvement in mixed-gender peer activities, we used the Heterosocial Involvement Scale (HSIS; Gondoli et al., 2011). The HSIS is intended to assess cross-sex peer group activities typical of early adolescents rather than the dating activities common among older adolescents. Using a 7-point Likert-type scale, ranging from 1 (*never*) to 7 (*once a day*), respondents reported how often they engaged in a range of cross-sex activities. A sample item reads: "About how often do you spend free time after school with a group of boys and girls?" By averaging the item scores, an estimate of early adolescents' heterosocial involvement was created, with higher scores indicating greater heterosocial involvement. The scale showed good internal consistency ($\alpha_{w1} = .85$).

Demographics. Age, gender, and BMI were included as control variables. Self-reported measures of height and weight were used to estimate BMI, which was calculated as weight (kilograms) per square height (meter). BMI scores were standardized within each age cohort to create age-specific BMI z-scores.

Results

Descriptive statistics for and zero-order correlations between all main variables included in the model are presented in Table 1.

[Table 1 about here]

Testing The Moderated Moderation Hypotheses

To test H1-2, the moderating role of pubertal timing (H1) and heterosocial involvement (H2) on the relationship between magazine reading and media internalization, we used Hayes' (2013) PROCESS macro for SPSS, Model 3. This so-called moderated moderation model tests whether the relationship between sexualizing magazine reading and media internalization depends on pubertal timing, and the two-way interaction between sexualizing magazine reading and pubertal timing varies depending on heterosocial involvement (see Figure 1). The controls used in the model were wave 1 values for age, BMI, gender, and prior values for media internalization (wave 1 and wave 2). To assess the unique contribution of magazines as a sexualizing medium, we included primetime television and music television (both wave 1) as control variables in the analysis. All estimated effects reported are unstandardized regression coefficients (as recommended by Hayes [2013]).

[Figure 1 about here]

In line with H1, the two-way interaction between magazine reading (wave 1) and pubertal timing (wave 1) was significant, $b = .26$, $SE = .09$, $p = .006$, 95% CI [.075, .439] (see Table 2).

[Table 2 about here]

Thus, the influence of magazine reading (wave 1) on early adolescents' media internalization (wave 3) varied depending on their level of pubertal timing (wave 1). Simple slopes analyses¹ revealed that magazine reading (wave 1) positively predicted media internalization (wave 3) when pubertal timing (wave 1) was high ($\theta_{[X \rightarrow Y] | M=.65} = .18$, $SE = .08$, $p = .023$, 95% CI [.026, .337]), but not when pubertal timing was moderate ($\theta_{[X \rightarrow Y] |$

¹ Simple slopes analyses were conducted to calculate the conditional effect of magazine reading on media internalization, fixing pubertal timing at the mean, one standard deviation below the mean, and one standard deviation above the mean.

$M=.00 = .02, SE = .06, p = .795, 95\% \text{ CI } [-.105, .137])$ or low ($\theta_{[X \rightarrow Y] | M=-.65} = -.15, SE = .09, p = .102, 95\% \text{ CI } [-.330, .030])$.

Next, to test H2, we probed the conditional two way interaction between magazine reading (wave 1) and pubertal timing (wave 1) as a function of heterosocial involvement (wave 1). The results revealed a significant three-way interaction between magazine reading, pubertal timing, and heterosocial involvement (see Figure 2), indicating that the moderation by pubertal timing was dependent on heterosocial involvement (wave 1), $b = -.07, SE = .03, p = .026, 95\% \text{ CI } [-.140, -.009]$. Results of the Johnson-Neyman technique indicated that the two-way interaction between magazine reading and pubertal timing was positively associated with media internalization ($b = .08, SE = .04, p = .028, 95\% \text{ CI } [.010, .177]$) for heterosocial involvement scores lower than 2.358 (62.87 % of the sample). These results indicate that the moderating influence of pubertal timing on the relationship between magazine reading and media internalization is buffered when heterosocial involvement is moderate or high.

[Figure 2 about here]

Discussion

Extending earlier research on early adolescents' sexualizing media exposure and media internalization (e.g., Grabe et al., 2008; Rousseau & Eggermont, 2017), the present study aimed to investigate the conditions under which sexualizing media exposure results in more or less media internalization. More specifically, we aimed to provide novel insights into the relationship between sexualizing magazine consumption and media internalization by taking into account the moderating role of appearance-related developmental factors, i.e., pubertal timing and heterosocial involvement. Employing a three-way longitudinal survey design, we hypothesized that early pubertal timing relative to one's peers would moderate the association between sexualizing magazine consumption and media internalization one year later. Moreover, we predicted that the two-way interaction between sexualizing magazine

consumption and pubertal timing would be conditional on the extent to which early adolescents engage in cross-sex interactions (i.e., level of heterosocial involvement). The results of the current study supported our predictions and offer two important take-home messages that can guide future research.

First, our results emphasize the importance of investigating the *interplay* between media variables and developmental factors in predicting early adolescents' media internalization. As expected (H1), the interaction between sexualizing magazine consumption and pubertal timing significantly predicted media internalization. Early maturation positively influences the extent to which sexualizing magazine consumption results in the internalization of media appearance ideals. The LC4MP framework (Lang, 2000, 2006) helps explaining the significant two-way interaction between pubertal timing and sexualizing magazines consumption. Early developing adolescents experience pubertal changes in an early stage and therefore look physically different from their *on-time* peers. This discrepancy triggers a sense of alienation from the peer group and is associated with heightened body image awareness and dissatisfaction (Cumming et al., 2011; Lindberg et al., 2007). Due to feelings of peer alienation, early developers are less likely to consult peers for appearance-related information, making appearance-related media content more motivationally relevant to them (Lang & Bailey, 2015). As a consequence, early developers may actively seek out appearance-related media messages and allocate more resources to encoding this information (Lang, 2000, 2006; Lang & Bailey, 2015). Higher levels of attention and encoding increase the likelihood that mental images of media-promoted ideals are stored and subsequently transformed into personal standards that guide one's behavior (i.e. media message internalization) (Lang, 2000, 2006). Experimental research using eye tracking technology is needed to (a) collect data on early maturers' selective attention to appearance-related media messages and (b) examine how attentional biases relate to media internalization.

In addition, qualitative research should examine whether early maturers consider media models as more relevant comparison referents than their on-time and/or late maturing peers.

Moreover, in line with our second hypothesis, increased heterosocial involvement weakens the aforementioned moderating influence of early pubertal timing. Specifically, among early pubertal timers, higher consumption of sexualizing magazines did not make them more likely than their *on-time* peers to internalize media ideals when cross-sex interactions were moderate or high. Although early pubertal timers may consider appearance information in sexualizing magazines relevant and process this information more thoroughly (Lang, 2000, 2006), our results suggest that they also consult their peer network to (in)validate the observed information (Metzger et al., 2010; Schmitt-Beck, 2003). Mixed-sex peer interactions may prompt awareness of the fact that compliance to media-promoted appearance ideal is not a necessity to be liked and accepted. Our findings point to the complexity of the relationship between sexualizing media exposure and media internalization. We recommend applying a bioecological perspective when studying the impact of media on youth sexualization, as this study suggests that individual (pubertal timing), cultural (sexualizing magazines) and interpersonal (heterosocial involvement) factors interact with each other in predicting media internalization.

The second take-home message relates to the finding that cross-sex peer interactions can serve as a protective factor against the negative influence of pubertal timing on media internalization. The moderating influence of pubertal timing on the relationship between sexualizing magazine reading and media internalization is buffered when heterosocial involvement is moderate or high. This finding is novel, as earlier body image and media effects research has almost exclusively focused on same-sex peers and their potential negative influences (i.e. peer appearance criticism; Jones, Vigfusdottir, & Lee, 2004; Rousseau, et al, 2018a). Based on the filter hypothesis (Schmitt-Beck, 2003), which states that personal

communication can reinforce or weaken media messages, we assume that belonging to a mixed-sex peer group creates a certain awareness of the unrealistic nature of media appearance ideals. A high level of heterosocial involvement may therefore protect early adolescents' from internalizing idealized appearance norms in media. Expanding on Schmitt-Beck's (2003) filter hypothesis, we offer two possible explanations for our results.

One possible explanation is that most cross-sex interactions are platonic in nature and not inspired by romantic considerations (Compian et al., 2004). Prior studies show that involvement in platonic cross-sex interactions is not associated with body dissatisfaction but rather gives adolescents the feeling of being accepted by the peer group (Compian et al., 2004; McDougall et al., 2000). We therefore suggest that early maturers who engage in moderate to high mixed-sex peer activities may not feel pressure from their friends to comply with sexualized ideals shown in magazines, and refrain from internalizing these ideals. Early maturing boys and girls belonging to heterogeneous friend groups may learn that having an ideal appearance is not a prerequisite for being accepted by cross-sex peers and that looks are one of many elements that define one's likeability and attractiveness (McGee & Shevlin, 2009). Thus, in line with the filter hypothesis, interpersonal communication with other-sex peers may counter idealized appearance-related media messages. That way, cross-sex peers may form a protective layer against repeated exposure to persuasive idealized messages in magazines. Continuing along the same lines, it might also be that interacting with cross-sex friends makes early adolescents aware of the fact that their peers too do not comply with cultural beauty standards.

Although most cross-sex interactions among early adolescents are platonic, some adolescents are involved in a romantic cross-sex relationship (Arndorfer & Stormshak, 2008). Such romantic relationships may also challenge media-promoted appearance ideals. When one's romantic partner stresses that non-appearance related characteristics are at least as

important as outward appearance, appearance-related media information may become less credible and lose its relevance, resulting in lower levels of media internalization.

The observed protective role of cross-sex peers in media internalization accords with previous research emphasizing the importance of peers in (early) adolescents' development of critical media literacy skills (e.g., Rousseau & Eggermont, 2017). The efficacy of peer-led media literacy programs is already shown in research on tobacco use prevention (e.g., Austin, Pinkleton, Hust, & Cohen, 2005) and media portrayals of sex (Pinkleton, Austin, Cohen, Chen, & Fitzgerald, 2008). Less consensus, however, exists about the usefulness of media literacy interventions in *mixed-sex settings*. Previous research is divided as to whether (early) adolescents should receive body image/media literacy interventions in mixed- or single-sex groups. This study suggests that it might be useful to develop materials that encourage girls and boys to discuss media-related appearance pressures with each other, as such cross-sex discussions can break normative, appearance-related expectations regarding the opposite sex.

To better understand how cross-sex interactions may serve as a buffer against early adolescents' media internalization, we recommend future research to examine the distinct roles of platonic and romantic heterosocial involvement in early adolescents' perceived appearance-related pressure and media internalization. Both quantitative and qualitative research is needed to measure (a) the nature of early adolescents' cross-sex peer interactions (platonic or romantic) and (b) examine how different types of cross-sex involvement differently relate to early adolescents' perceived peer pressure to comply to media appearance ideals.

Limitations

Although the current study reveals important insights into early adolescents' media internalization, some limitations are important to note. First, we used only self-report measures of pubertal timing. It might be the case that some early adolescents overestimated or underestimated their level of pubertal timing. Although it is vital to have data on early

adolescents' *perceived* pubertal timing, future research should include objective measures of pubertal timing (e.g., age at peak height velocity) as well to get the full picture. Second, we do not have data on early adolescents' body image. As such, we can merely assume that early matures rely on media for coping with body image stress related to early pubertal changes. Future studies should investigate the mediating role of body image coping between pubertal timing and media internalization. Third, we focused on the influence of traditional media (i.e. magazines). Future research should investigate the impact of visual social media, such as Facebook and Instagram, as these social media are extensively used by early adolescents and often depict altered, idealized images of peers (Kim & Chock, 2015). Idealized online pictures of peers may give the impression that media-promoted ideals are attainable and supported by peers (Ho, Lee, & Liao, 2016), which may encourage early adolescents to engage in behaviors to obtain an idealized body. This could potentially undo the protective value of offline cross-sex peer interactions. Fourth, as we conducted the study in a [country deleted] context, the recruited sample mainly consisted of White early adolescents. Due to ethnic differences in the relationship between pubertal timing and body image (Compian et al., 2004; Hamlat et al., 2015) and between heterosocial involvement and body image (Compian et al., 2004), the findings are difficult to generalize to more ethnically diverse populations. Further research should conduct similar studies among other ethnic populations.

Conclusion

Despite its limitations, the present study provides useful insights into how biological (puberty), social (cross-sex interactions), and cultural (sexualizing magazines) factors jointly contribute to early adolescents' media internalization over time. Our results indicate that it is useful to consider appearance-related developmental factors when investigating which early adolescents are particularly vulnerable to sexualizing media messages. While early pubertal timing strengthens the relationship between sexualizing magazine consumption and media

internalization, mixed-sex peer involvement appears to be a protective factor in this relationship. Moderate to high cross-sex peer interactions buffer the moderating impact of pubertal timing on the link between sexualizing magazines consumption and media internalization. Thus, as expected, appearance-related developmental factors have a critical influence on early adolescents' internalization of media appearance ideals. We hope that our findings encourage further research to investigate the long-term and conjoint effects of biological and sociocultural factors in young adolescents media internalization.

Table 1

Descriptive Statistics and Zero-Order Correlations

				1.	2.	3.	4.	5.	6.		
		<i>M</i> (<i>SD</i>)	Range	W1	W1	W1	W1	W1	W1	W2	W3
1. Prime-time	W1	15.09 (8.25)	0-35	1							
2. Music TV	W1	2.10 (1.71)	1-7	.09**	1						
3. Magazines	W1	2.05 (.90)	1-5	.10**	.29***	1					
4. Puberty	W1	2.04 (.70)	1-4	.06	.09**	.14***	1				
5. HSI	W1	2.31 (1.18)	1-7	.10**	.25***	.26***	.17***	1			
6. Media Internalization	W1	1.79 (.79)	1-5	.08**	.16***	.29***	.12***	.30***	1		
	W2	1.80 (.83)	1-5	.09**	.14***	.23***	.18***	.23***	.46***	1	
	W3	1.88 (.86)	1-5	.10**	.14***	.15***	.17***	.21***	.40***	.49***	1

Note. HSI heterosocial involvement. ** $p < .01$ *** $p < .001$.

Table 2

Ordinary Least Squares Regression Analysis Predicting Media Internalization (w3)

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	.051	.293	.173	.862
Pubertal timing (W1)	-.368	.200	-1.843	.066
Sex magazines (W1)	.016	.062	.261	.794
Sex magazines * pubertal timing (W1)	.257	.093	2.768	.006
HSI (W1)	.072	.056	1.288	.198
Sex magazines * HSI (W1)	-.016	.023	-.675	.500
Pubertal timing * HSI (W1)	.128	.079	1.625	.105
Sex magazines * pubertal timing * HIS (W1)	-.074	.033	-2.237	.026
Controls				
Primetime TV (W1)	.003	.003	1.121	.263
Music TV (W1)	.024	.015	1.630	.104
Gender (W1)	.012	.047	.256	.798
Age (W1)	.016	.023	.687	.492
BMI (W1)	.022	.010	2.087	.037
Media internalization (W1)	.225	.035	6.485	<.001
Media internalization (W2)	.364	.033	11.150	<.001

Note. $R^2 = .30$, $F(14, 952) = 29.10$, $p < .001$. ΔR^2 due to three-way interaction = .03.

Coefficients are unstandardized. w = wave; HSI = Heterosocial involvement; Sex magazines = Sexualizing magazines.

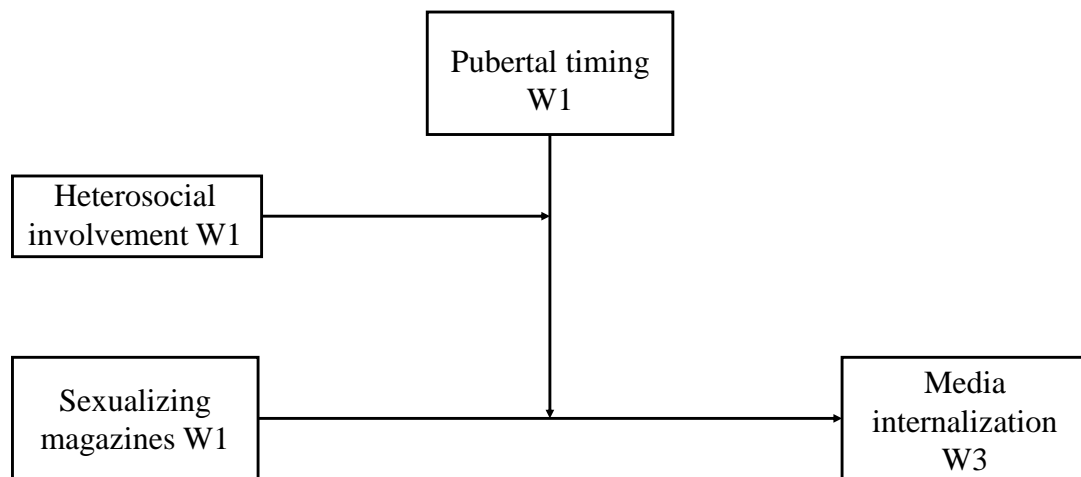


Figure 1. Hypothesized model testing whether the relationship between sexualizing magazine reading and media internalization depends on pubertal timing, and the two-way interaction between sexualizing magazine reading and pubertal timing depends on heterosocial involvement.

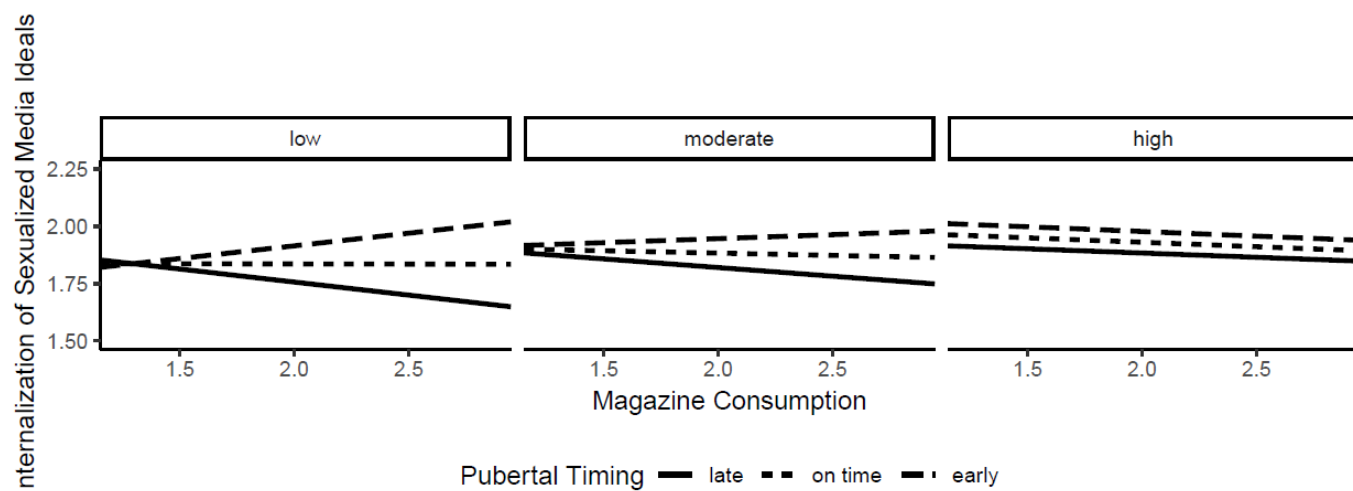


Figure 2. The interaction between sexualizing magazine reading and pubertal timing on media internalization by level of heterosocial involvement. (The three panels for heterosocial involvement correspond to values of heterosocial involvement equal to a standard deviation below the mean, the sample mean, and a standard deviation above the mean.)

References

- Anschutz, D., Engels, R., Van Leeuwe, J., & van Strien, T. (2009). Watching your weight? The relations between watching soaps and music television and body dissatisfaction and restrained eating in young girls, *Psychology and Health*, 24, 1035-1050, doi:10.1080/08870440802192268
- Anschutz, D. J., Spruijt-Metz, D., Van Strien, T., & Engels, R. C. (2011). The direct effect of thin ideal focused adult television on young girls' ideal body figure. *Body Image*, 8, 26-33. doi:10.1016/j.bodyim.2010.11.003
- Arndorfer, C. L., & Stormshak, E. A. (2008). Same-sex versus other-sex best friendship in early adolescence: Longitudinal predictors of antisocial behavior throughout adolescence. *Journal of Youth and Adolescence*, 37, 1059-1070. doi:10.1007/s10964-008-9311-x.
- Aubrey, J. S., & Frisby, C. M. (2011). Sexual objectification in music videos: A content analysis comparing gender and genre. *Mass Communication and Society*, 14, 475-501. doi:10.1080/15205436.2010.513468
- Bond, B. J., & Drogos, K. L. (2014). Sex on the shore: Wishful identification and parasocial relationships as mediators in the relationship between Jersey Shore exposure and emerging adults' sexual attitudes and behaviors. *Media Psychology*, 17, 102-126. doi:10.1080/15213269.2013.872039
- Bordo, S. (2003). *Unbearable weight: Feminism, western culture, and the body*. Berkeley, CA: University of California Press.
- Cash, T. F., Santos, M. T., & Williams, E. F. (2005). Coping with body-image threats and challenges: Validation of the Body Image Coping Strategies Inventory. *Journal of Psychosomatic Research*, 58, 190-199. doi:10.1016/j.jpsychores.2004.07.008

- Choma, B. L., Shove, C., Busseri, M. A., Sadava, S. W., & Hosker, A. (2009). Assessing the role of body image coping strategies as mediators or moderators of the links between self-objectification, body shame, and well-being. *Sex Roles, 61*, 699-713.
doi:10.1007/s11199-009-9666-9
- Clark, L., & Tiggemann, M. (2007). Sociocultural influences and body image in 9 to 12-year-old girls: The role of appearance schemas. *Journal of Clinical Child and Adolescent Psychology, 36*, 76-86. doi:10.1080/15374410709336570
- Compian, L., Gowen, L. K., & Hayward, C. (2004). Peripubertal girls' romantic and platonic involvement with boys: Associations with body image and depression symptoms. *Journal of Research on Adolescence, 14*, 23-47. doi:10.1111/j.1532-7795.2004.01401002.x
- Craik, F. I., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior, 11*, 671-684.
doi:10.1016/S0022-5371(72)80001-X
- Cumming, S. P., Standage, M., Loney, T., Gammon, C., Neville, H., Sherar, L. B., & Malina, R. M. (2011). The mediating role of physical self-concept on relations between biological maturity status and physical activity in adolescent females. *Journal of Adolescence, 34*, 465-473. doi:10.1016/j.adolescence.2010.06.006
- Dakanalis, A., Di Mattei, V. E., Bagliacca, E. P., Prunas, A., Sarno, L., Riva, G., . . . Zanetti, M. A. (2012). Disordered eating behaviors among Italian men: Objectifying media and sexual orientation differences. *Eating Disorders, 20*, 356-367.
doi:10.1080/10640266.2012.715514
- Dallesasse, S. L., & Kluck, A. S. (2013). Reality television and the muscular ideal. *Body Image 10*, 209-315. doi:10.1016/j.bodyim.2013.02.004

- Dion, J., Hains, J., Vachon, P., Plouffe, J., Laberge, L., Perron, M., ... & Leone, M. (2016). Correlates of body dissatisfaction in children. *The Journal of Pediatrics*, 171, 202-207. doi:10.1016/j.jpeds.2015.12.045
- Dunn, J., Lewis, V., & Patrick, S. (2010). The idealization of thin figures and appearance concerns in middle school children. *Journal of Applied Biobehavioral Research*, 15, 134-143. doi:10.1111/j.1751-9861.2010.00057.x
- Eggermont, S. (2006). Television viewing and adolescents' judgment of sexual request scripts: A latent growth curve analysis in early and middle adolescence. *Sex Roles*, 55, 457-468. doi:10.1007/s11199-006-9099-7
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117-140. doi:10.1177/001872675400700202
- Flynn, M.A., Park, S. Y., Morin, D.T., & Stana, A. (2015). Anything but real: Body idealization and objectification of MTV docusoap characters. *Sex Roles*, 72, 173-182. doi:10.1007/s11199-015-0464-2.
- Fredrickson, B. L., & Roberts, T. A. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly*, 21, 173-206. doi:10.1111/j.1471-6402.1997.tb00108.x
- Gondoli, D. M., Corning, A. F., Salafia, E. H. B., Bucchianeri, M. M., & Fitzsimmons, E. E. (2011). Heterosocial involvement, peer pressure for thinness, and body dissatisfaction among young adolescent girls. *Body Image*, 8, 143-148. doi:10.1016/j.bodyim.2010.12.005
- Grabe, S., Ward, L. M., & Hyde, J. S. (2008). The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological Bulletin*, 134, 460-476. doi:10.1037/0033-2909.134.3.460

- Graves, J. L., & Kwan, S. (2012). Is there really “more to love”? Gender, body, and relationship scripts in romance-based reality television. *Fat Studies*, 1, 47-60. doi:10.1080/21604851.2012.627791
- Greenberg, B. S., Eastin, M., Hofschire, L., Lachlan, K., & Brownell, K. D. (2003). Portrayals of overweight and obese individuals on commercial television. *American Journal of Public Health*, 93, 1342-1348. doi:10.2105/AJPH.93.8.1342
- Hamlat, E. J., Shapero, B. G., Hamilton, J. L., Stange, J. P., Abramson, L. Y., & Alloy, L. B. (2015). Pubertal timing, peer victimization, and body esteem differentially predict depressive symptoms in African American and Caucasian girls. *The Journal of Early Adolescence*, 35, 378-402. doi:10.1177/0272431614534071
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York, NY: Guilford Press.
- Ho, S. S., Lee, E. W., & Liao, Y. (2016). Social network sites, friends, and celebrities: The roles of social comparison and celebrity involvement in adolescents’ body image dissatisfaction. *Social Media + Society*, 2, 1-11. doi:10.1177/2056305116664216
- Hobza, C. L., Walker, K. E., Yakushko, O., & Peugh, J. L. (2007). What about men? Social comparison and the effects of media images on body and self-esteem. *Psychology of Men & Masculinity*, 8, 161-172. doi:10.1037/1524-9220.8.3.161
- Jones, D. C., Vigfusdottir, T. H., & Lee, Y. (2004). Body image and the appearance culture among adolescent girls and boys an examination of friend conversations, peer criticism, appearance magazines, and the internalization of appearance ideals. *Journal of Adolescent Research*, 19, 323-339. doi:10.1177/0743558403258847
- Jongenelis, M. I., Byrne, S. M., & Pettigrew, S. (2014). Self-objectification, body image disturbance, and eating disorder symptoms in young Australian children. *Body Image*, 11, 290-302. doi:10.1016/j.bodyim.2014.04.002

- Katz, E., & Lazarsfeld, P. (1955). *Personal influence: The role played by people in the flow of mass communication*. New York, NY: The Free Press.
- Kim, J. W., & Chock, T. M. (2015). Body image 2.0: Associations between social grooming on Facebook and body image concerns. *Computers in Human Behavior*, 48, 331-339. doi:10.1016/j.chb.2015.01.009
- Knobloch-Westerwick, S. (2015). Thinspiration: Self-improvement versus self-evaluation social comparisons with thin-ideal media portrayals. *Health Communication*, 30, 1089-1101. doi:10.1080/10410236.2014.921270
- Lang, A. (2000). The limited capacity model of mediated message processing. *Journal of Communication*, 50, 46-70. doi:10.1111/j.1460-2466.2000.tb02833.x
- Lang, A. (2006). Using the limited capacity model of motivated mediated message processing to design effective cancer communication messages. *Journal of Communication*, 56, S57-S80. doi:10.1111/j.1460-2466.2006.00283.x
- Larson, R. W., Clore, G. L., & Wood, G. A. (1999). The emotions of romantic relationships: Do they wreak havoc on adolescents? In W. Furman, B. B. Brown, & C. Feiring (Eds.), *The development of romantic relationships during adolescence* (pp. 19–49). Cambridge, England: Cambridge University Press.
- Laursen, B., & Hartl, A. C. (2013). Understanding loneliness during adolescence: Developmental changes that increase the risk of perceived social isolation. *Journal of Adolescence*, 36, 1261-1268. doi:10.1016/j.adolescence.2013.06.003
- Lawler, M., & Nixon, E. (2011). Body dissatisfaction among adolescent boys and girls: The effects of body mass, peer appearance culture and internalization of appearance ideals. *Journal of Youth and Adolescence*, 40, 59-71. doi:10.1007/s10964-009-9500-2
- Levine, M. P., & Murnen, S. K. (2009). “Everybody knows that mass media are/are not [pick one] a cause of eating disorders”: A critical review of evidence for a causal link

- between media, negative body image, and disordered eating in females. *Journal of Social and Clinical Psychology*, 28, 9-42. doi:10.1521/jscp.2009.28.1.9
- Lindberg, S. M., Grabe, S., & Hyde, J. S. (2007). Gender, pubertal development, and peer sexual harassment predict objectified body consciousness in early adolescence. *Journal of Research on Adolescence*, 17, 723-742. doi:10.1111/j.1532-7795.2007.00544.x
- Manago, A. M., Taylor, T., & Greenfield, P. M. (2012). Me and my 400 friends: The anatomy of college students' Facebook networks, their communication patterns, and well-being. *Developmental Psychology*, 48, 369-380. doi:10.1037/a0026338
- McDougall, P., Hymel, S., & Zarbatany, L. (2000, March). *Cross-sex friendship in preadolescence: Are there associated benefits?* Paper presented at the biennial meeting of the Society for Research on Adolescence, Chicago.
- McGee, E., & Shevlin, M. (2009). Effect of humor on interpersonal attraction and mate selection. *The Journal of Psychology*, 143, 67-77. doi:10.3200/JRLP.143.1.67-77
- Metzger, M. J., Flanagin, A. J., & Medders, R. B. (2010). Social and heuristic approaches to credibility evaluation online. *Journal of Communication*, 60, 413-439. doi:10.1111/j.1460-2466.2010.01488.x
- Myers, T. A., & Crowther, J. H. (2009). Social comparison as a predictor of body dissatisfaction: A meta-analytic review. *Journal of Abnormal Psychology*, 118, 683-698. doi:10.1037/a0016763
- Neumark-Sztainer, D., Paxton, S. J., Hannan, P. J., Haines, J., & Story, M. (2006). Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *Journal of Adolescent Health*, 39, 244-251. doi:10.1016/j.jadohealth.2005.12.001

- Petersen, A. C., Crockett, L., Richards, M., & Boxer, A. (1988). A self-report measure of pubertal status: Reliability, validity, and initial norms. *Journal of Youth and Adolescence*, 17, 117-133. doi:10.1007/s10964-011-9720-0.
- Pope, H. G., Phillips, K. A., & Olivardia, R. (2000). *The Adonis complex: How to identify, treat, and prevent body obsession in men and boys*. New York, NY: Touchstone Books.
- Ricciardelli, R., Clow, K. A., & White, P. (2010). Investigating hegemonic masculinity: Portrayals of masculinity in men's lifestyle magazines. *Sex Roles*, 63, 64-78. doi:10.1007/s11199-010-9764-8
- Rousseau, A., Aubrey, J. S., & Eggermont, S. (2018a). The impact of sports magazine consumption on mesomorphic body standards and self-sexualizing behaviors: A panel study of preadolescent boys. *Men and Masculinities*. Advance online publication. doi:10.1177/1097184X18767224
- Rousseau, A., & Eggermont, S. (2017). Tween television and peers: Reinforcing social agents in early adolescents' body surveillance and self-objectification. *Journal of Research on Adolescence*. doi:10.1111/jora.12367
- Rousseau, A., & Eggermont, S. (2018). Media ideals and early adolescents' body image: Selective avoidance or selective exposure? *Body Image*, 26, 50-59. doi:10.1016/j.bodyim.2018.06.001
- Rousseau, A., Eggermont, S., & Frison, E. (2017). The reciprocal and indirect relationships between passive Facebook use, comparison on Facebook, and adolescents' body dissatisfaction. *Computers in Human Behavior*, 73, 336-344. Doi:10.1016/j.chb.2017.03.056

- Rousseau, A., Gamble, H., & Eggermont, S. (2017). The role of appearance schematicity in the internalization of media appearance ideals: A panel study of preadolescents. *Journal of Adolescence*, 60, 27-38. doi:10.1016/j.adolescence.2017.07.011
- Rousseau, A., Rodgers, R. F., & Eggermont, S. (2017). A biopsychosocial model for understanding media internalization and appearance dissatisfaction among preadolescent boys and girls. *Communication Research*, 1-27. doi:10.1177/0093650217739996
- Rousseau, A., Trekels, J., & Eggermont, S. (2018b). Preadolescents' reliance on and internalization of media appearance ideals: Triggers and consequences. *The Journal of Early Adolescence*, 38, 1074-1099. doi:10.1177/0272431617714330
- Sánchez-Carracedo, D., Barrada, J. R., López-Guimerà, G., Fauguet, J., Almenara, C. A., & Trepát, E. (2012). Analysis of the factor structure of the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3) in Spanish secondary-school students through structural equation modeling. *Body Image*, 9, 163-171. doi:10.1016/j.bodyim.2011.10.002
- Schmitt-Beck, R. (2003). Mass communication, personal communication and vote choice: The filter hypothesis of media influence in comparative perspective. *British Journal of Political Science*, 33, 233-259. doi:10.1017/S0007123403000103
- Simpson, C. C., Kwitowski, M., Boutte, R., Gow, R. W., & Mazzeo, S. E. (2016). Messages about appearance, food, weight and exercise in "tween" television. *Eating Behaviors*, 23, 70-75. doi:10.1016/j.eatbeh.2016.08.001
- Skoog, T., Sorbring, E., & Bohlin, M. (2015). Facebook as a means to make new peers among early maturing girls. *Computers in Human Behavior*, 48, 500-505. doi:10.1016/j.chb.2015.02.007

- Skoog, T., & Stattin, H. (2014). Why and under what contextual conditions do early-maturing girls develop problem behaviors? *Child Development Perspectives*, 8, 158-162.
doi:10.1111/cdep.12076
- Stattin, H., & Magnusson, D. (1990). *Paths through life: Vol. 2. Pubertal maturation in female development*. Hillsdale, NJ: Lawrence Erlbaum.
- Thompson, J. K., & Stice, E. (2001). Thin-ideal internalization: Mounting evidence for a new risk factor for body-image disturbance and eating pathology. *Current Directions in Psychological Science*, 10, 181-183. doi:10.1111/1467-8721.00144
- Thompson, J. K., Van Den Berg, P., Roehrig, M., Guarda, A. S., & Heinberg, L. J. (2004). The sociocultural attitudes towards appearance scale-3 (SATAQ-3): Development and validation. *International Journal of Eating Disorders*, 35, 293-304.
doi:10.1002/eat.10257
- Tiggemann, M. (2003). Media exposure, body dissatisfaction and disordered eating: Television and magazines are not the same! *European Eating Disorders Review*, 11, 418-430. doi:10.1002/erv.502
- Trekels, J., & Eggermont, S. (2017). Linking magazine exposure to social appearance anxiety: The role of appearance norms in early adolescence. *Journal of Research on Adolescence*, 27, 736-751. doi:10.1111/jora.12311
- Tremblay, L., & Lariviere, M. (2009). The influence of puberty onset, body mass index, and pressure to be thin on disordered eating behaviors in children and adolescents. *Eating Behaviors*, 10, 75-83. doi:10.1016/j.eatbeh.2008.12.001
- Vandenbosch, L., & Eggermont, S. (2012). Understanding sexual objectification: A comprehensive approach toward media exposure and girls' internalization of beauty ideals, self-objectification, and body surveillance. *Journal of Communication*, 62, 869-887. doi:10.1111/j.1460-2466.2012.01667.x

- Vandenbosch, L. P. (2017). Media representation: Health and body images. In P. Roessler (Ed.), *International encyclopedia of media effects* (pp. 1–13). Hoboken, NJ: John Wiley & Sons. doi:10.1002/9781118783764.wbieme0145
- Vandenbosch, L., Vervloessem, D., & Eggermont, S. (2013). “I might get your heart racing in my skin-tight jeans”: Sexualization on music entertainment television. *Communication Studies*, 64, 178-194. doi:10.1080/10510974.2012.755640
- Ward, L. M. (2016). Media and sexualization: State of empirical research, 1995–2015. *The Journal of Sex Research*, 53, 560-577. doi:10.1080/00224499.2016.1142496